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Eleventh ATIRA Technological Conference

The eleventh Technological Conference of the Ahmedabad Textile Industry's Research Association (ATIRA), Ahmedabad, on the theme 'Modernization and Renovation in the Textile Industry' was held on 5-6 April 1977.

While delivering the inaugural speech Shri S. S. Puri, Secretary to the Department of Textiles, Government of India, mentioned that the government was aware of the fact that the textile industry was next in importance only to agriculture. With a weightage of approximately 19% in the overall industrial production, the textile industry has a significant bearing on the overall industrial growth. In the period from April 1976 to February 1977, cotton and jute textile industries were the only sectors to record a negative growth while other industries had shown growth rates of 10-20%. A longer-term analysis of the textile industry brings out somewhat better results but it is nevertheless true that a stagnating textile industry pulls down the national economic growth. Shri Puri emphasized the fact that machinery modernization by itself would not cure the ills of the industry. Side by side it was also necessary to ensure that labour and machinery were better utilized. He urged the industry to examine closely the need for changes in the management, finance and marketing structures and to remove any obsolescence in those spheres along with modernization of machinery.

In his introductory remarks, Shri Navnitlal Shodhan, Chairman, Council of Administration of ATIRA, underlined the need for a judicious, well-planned approach to modernization

with specific reference to the needs and resources of each unit. He emphasized that no general modernization plan would be possible. The prohibitive machine cost might come in the way of sick units taking the full advantage of the IDBI soft loans.

In his welcome address, Dr P. C. Mehta, Director, ATIRA, said that the Association had considerable experience in studying modernization needs, their priorities and their relevance with respect to each individual mill. From 1971 to 1976 it had carried out studies for 18 mills either for modernization or for working capital requirements. Since the beginning of this year it had completed 11 studies for modernization and four for working capital requirements. ATIRA had on hand seven more studies, six for modernization and one for working capital. One of the major problems slowing down the pace of modernization had been the lack of adequate resources with the industry. It was, therefore, very appropriate that the IDBI had recently introduced a soft loan scheme for modernization of textile mills.

He further said that often modernization was interpreted in the restricted sense of replacement of an old machine with a new one. Both replacement and renovation should be considered as modernization as long as these changes result in improved technology with gains in quality, productivity or cost. Modernization and choice of machinery must necessarily be related to the market of each mill and the product mix it was manufacturing or was planning to manufacture. Such questions as levels of

efficiency which could be expected to be achieved, the standards of quality which could be realized and the ease with which these products could be marketed have to be considered, particularly for expensive and sophisticated products, with reference to the past experience, achievements, traditions, and competence of each individual mill. Plans of modernization would also have to take into account the level and nature of improvement in production which can be expected and the period over which the investment would be paid back. These considerations would help in assigning relative priorities for modernization and would assist the mill in phasing its expenditure.

Seven papers dealing with the various aspects of the modernization and renovation of the industry were presented.

Hari Om Ashram awards were presented to Shri J. K. Shah, Shri R. C. Chokshi and Dr J. J. Shroff of Arvind Mills for their contribution towards the development of a durable press finish for all-cotton fabrics.

Over 500 delegates including about 75 from outstation mills participated in the conference.

Communication Systems for Mines

The Central Mining Research Station (CMRS), Dhanbad, has developed a complete communication system (central despatcher system) for mines. The system has a facility for loud hailing, indication of 'on' and 'off' conditions for all mine machinery, and digital display of loaded and empty tubes in mines, loaders working underground,

etc. at the central despatcher board. The system also incorporates a manually operated exchange with sound-powered telephones for use in underground mines. A completely indigenous system, it has already been installed in a mine and is under installation in two other mines.

CMRS has also developed an intrinsically safe direct dialing sound powered telephone with an automatic exchange. It will overcome the difficulty of operating an exchange manually. The system has been so designed that the spare telephone lines of the existing surface exchange can be utilized underground by special coupling to reduce the cost. But where no spare telephone line is available the underground exchange can also be connected with the surface exchange and even to national postal network. Neither the manual nor the automatic exchange systems requires any battery underground and the telephone lines are also not charged with direct current. These exchanges can meet most of the requirements of wired communication in Indian mines.

An intrinsically safe phone has also been developed at CMRS for use in case of emergency. It is a miniature phone which can be hooked up to a pair of wires spread all over the mine and can be attached to the helmet of a miner. By this, miners can have a two-way conversation with surface from any place in a mine. In order to make the system foolproof, parallel surface installations are placed in three or four places like pit top, lamp room and office of the manager. The system also incorporates indicator to detect short circuit or break in wire. These emergency phones are on field trials.

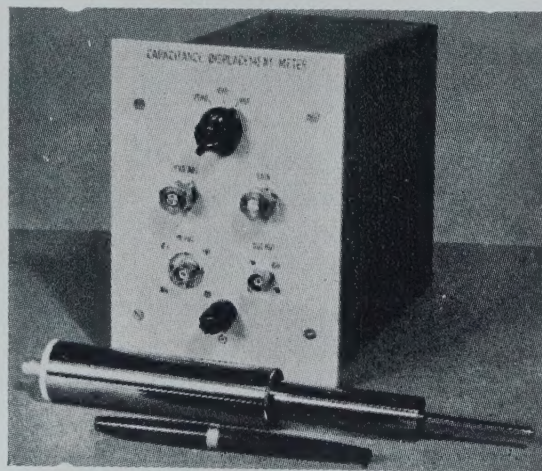
Long-Stroke Linear Displacement Meter

A capacitance-type long-stroke linear displacement transducer and associated amplifier have been developed at the National Aeronautical Laboratory (NAL), Bangalore, for the measurement of displacements in the range 0-50 mm.

Similar devices for other stroke lengths can also be fabricated on the same principle, depending upon the requirements. The basic device comprises two concentric cylinders, one moving inside the other, both of them being enclosed in a guard tube. The transducer and associated instrumentation can be employed for the measurement of static and dynamic displacements. The device is rugged, unaffected by magnetic fields and can be employed for higher temperature operation. The transducer has smaller dimensions as compared to other devices for the same range. It also has better linearity and higher sensitivity.

The specifications of the long-stroke linear displacement meter, developed at NAL, are :

Range	: 0 to 50 mm full scale
Non-linearity	: less than $\pm 0.2\%$ fsd
Resolution	: better than $\pm 0.05\%$ fsd with the associated amplifier and suitable readout equipment
Accuracy	: better than $\pm 0.5\%$ fsd
Frequency response	: from 0 to 600 Hz, flat; without spring at 1 kHz, -3 dB
Sensitivity	: 0.1 V/mm (with the associated amplifier)
Ambient range for transducer alone	: $+10^{\circ}\text{C}$ to $+120^{\circ}\text{C}$
Ambient range for instrument alone	: $+10^{\circ}\text{C}$ to $+50^{\circ}\text{C}$
Nominal dimensions	: Transducer—3 cm \times 24 cm Instrument—35 cm \times 10 cm \times 25 cm
Power requirements	: 230 V, 50 Hz, 10 VA



Long-stroke linear displacement meter developed at NAL, Bangalore

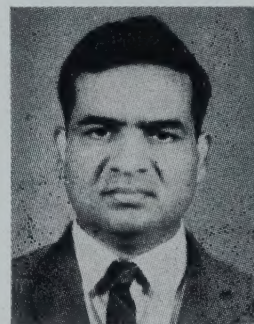
Presently the device is undergoing pilot plant trials.

Pilot Plant for Herbicide: NCL

A process for making a slow-release herbicide was developed some time back at the National Chemical Laboratory, Poona. A pilot plant to produce 75-100 kg of the formulated product has been set up and successfully commissioned by the laboratory. Large quantities of the herbicide are required for field trials.

INTERACTION OF ELECTROMAGNETIC FIELDS AND MATTER

Bhatnagar Prize-winner Prof. Sodha's Work Prof. Mahendra S. Sodha has, for the last two decades, made valuable contributions to the various aspects of the interaction of electric, magnetic and electromagnetic fields with dielectrics, semiconductors and plasmas.



His group at the Indian Institute of Technology, Delhi, has won international recognition in laser-plasma interactions, hot electron phenomena in semiconductors, nonlinear propagation and harmonic generation in plasmas, physics of colloidal plasmas, and inhomogeneous optical waveguides; several papers, reviews and monographs have emerged from the group. Project-oriented work on MHD power generation has also been carried out.

The phenomenon of self-focusing of laser beams occupies a unique place in nonlinear optics because it considerably influences all other nonlinear phenomena. Self-focusing of laser beams in plasmas has recently attrac-

Prof. M. S. Sodha of the Indian Institute of Technology, Delhi, has been awarded the Shanti Swarup Bhatnagar prize in physical sciences for the year 1974 (jointly with Prof. K. P. Sinha) [*CSIR News*, 27 (1977), 57].

ted a great deal of attention on account of its applicability to controlled fusion.

Sodha and his group have derived expressions for the field-dependent dielectric constant (corresponding to different mechanisms) on the basis of phenomenological and kinetic models of carrier transport and made use of these expressions along with the parabolic equation approach to investigate the steady state and transient aspects of self-focusing of laser beams in plasmas. His group also studied the effect of self-focusing on various other nonlinear parametric processes. The phenomenon of filamentation, a direct consequence of the field-dependent dielectric constant, has also been studied.

The collision integral for investigating hot electron phenomena in degenerate semiconductors has been derived and applied to a number of studies. Hot electron phenomena with different band structures and scattering mechanisms have been investigated.

Expressions for field-dependent conductivity in plasmas and semiconductors have been derived and used to investigate the phenomena of nonlinear propagation, demodulation, cross-modulation, pulse propagation, Faraday rotation and harmonic generation. The group has also derived optimum conditions for maximum power of harmonics.

The physics of gases with suspension of particles having a low work function has been extensively studied and applied to MHD power generation and rocket exhaust blackout problems; comparison between theoretical and experimental results has been satisfactory.

Sodha and his group have made pioneering contributions to propagation, dispersion and signal distortion in dielectric and selfoc waveguides. The work finds application in the field of optical communications.

They have shown theoretically and experimentally that colloidal plasmas can have sufficient conductivity for MHD power generation at relatively

low temperatures. Nonequilibrium MHD generators have also been investigated in detail.

Theoretical and experimental studies of transport phenomena in seeded combustion products of different fuel-oxidizer system have yielded the basic data for duct design. Studies carried out by the group on water gas-oxygen/air systems are directly applicable to the BARC-BHEL water gas based MHD plant.

CHROMOSOME RESEARCH

Bhatnagar Prize-winner Prof. (Mrs) Sharma's Work

Prof. (Mrs) Archana Sharma and her group are actively engaged, since 1951, in research in the fields of cytogenetics



Prof. (Mrs) Sharma

and cytochemistry, including chromosomes in relation to evolution, details of their structure and the changes they undergo during differentiation and speciation.

She and her co-workers have provided concrete evidences of the new theory of speciation in asexually reproducing plants. They have demonstrated, through these works, that the somatic tissue represents a chromosomal mosaic. This variability plays a significant role in the origin of new individuals through vegetative means.

In the field of chromosomal control of differentiation, the group first demonstrated that division could be induced in adult tissue through nucleic acid precursors and a deficiency in the sugar moiety was responsible for the polytenic condition in differentiated nuclei. Her group has also been

Prof. (Mrs) Archana Sharma of the Botany Department of Calcutta University, Calcutta, has been awarded the Shanti Swarup Bhatnagar prize in biological sciences for the year 1975 (jointly with Dr Obaid Siddiqi of the Tata Institute of Fundamental Research, Bombay) [*CSIR News*, 27 (1977), 57.]

engaged in solving problems of taxonomic dispute in a large number of angiospermous genera through the application of refined methodology.

An active group of workers is at present associated with her in collaboration with the Institute for Postgraduate Medical Education and Research, SSKM Hospital, Calcutta. This group is working on screening for certain inborn errors of metabolism and chromosomal alterations and also on assessment of various serum proteins and enzymes in Indian populations, using the recent developments in human chromosome methodology, gel electrophoresis and chromatographic techniques, specially modified as required.

Several new techniques developed by her and her group are being employed widely in different laboratories of the world for the study of chromosome structure. Her book entitled 'Chromosome techniques—theory and practice' (jointly with Prof. A. K. Sharma) was published by Butterworths (London) in 1965, reprinted in 1967, and enlarged and revised in the second edition in 1972. The third edition is under preparation. This is the only comprehensive text-cum-reference book for advanced-level research, and incorporates all aspects of chromosome analysis in plant, animal and human materials including all modern biochemical and biophysical methods. Her other books include 'Laboratory procedures in human genetics', in two volumes—Vol. I: 'Chromosome methodology' published in 1974; and Vol. II: 'Biochemical methodology' (both jointly with Dr G. Talukder) published in 1976. Both the volumes have very wide applications in the study of genetic disorders and genetic polymorphisms in the human system. Her latest book 'The chromosomes' was published in December 1976 by the Oxford and IBH Publishing Company, under a scheme sponsored by the University Grants Commission and the National Book Trust of India.

Prof. (Mrs) Sharma was awarded Sir J. C. Bose award in life sciences (jointly with Prof. A. K. Sharma) for 1974 by the University Grants Commission in recognition of her 'unique contributions to teaching and research in cytogenetics in India'. She is a fellow of the Indian National Science Academy and the Indian Academy of Sciences.

Most of her research articles, more than 80, have been published in international journals.

She is the editor (jointly with Prof. A. K. Sharma) of *The Nucleus*, an international journal of cytology and allied topics. She is the editor of two journals, *Bulletin of the Botanical Society of Bengal* and *Research Bulletin*. She is associated with a num-

ber of scientific societies, in different executive capacities, including the Indian Science Congress Association.

Prof. (Mrs) Sharma has participated in various capacities in different international conferences including the International Congress of Histo and Cytochemistry, Frankfurt (1964); and the International Chromosome Conferences, Oxford (1967, 1970), Leiden (1974) and the Soviet Union (1975). She has also visited various laboratories in Europe. In 1973, she went under the Unesco fellowship programme to the Medical Nobel Institute for Cell Genetics (Stockholm) to work with Prof. T. Caspersson and also for ultrastructural and cell fusion studies at the Queen Mary College, London, and other laboratories in UK.

whose synthesis is stimulated by light. It was concluded that part of the light effect on protein synthesis could be mediated by cAMP.

It is now well known that proteins including glycoproteins are major components of all cellular membranes including mitochondrial membranes, and play a key role in the determination of structural and functional properties of membranes. While the molecular architecture of cell surface membranes has been extensively studied, comparable studies of mitochondrial membranes have not been attempted. The separation of major membrane protein and glycoprotein components of plant mitochondria by polyacrylamide gel electrophoresis in the presence of SDS has been reported in the present work. It was shown that mitochondrial membranes of cotyledons of 24 hr germinating seeds of *Vigna sinensis* could be separated into 15 components by polyacrylamide gel electrophoresis in the presence of SDS. The same procedure revealed the presence of 4 glycoproteins. Dry seeds contained mitochondrial particles that had similar membrane protein and glycoproteins composition.

CSIR SUPPORT TO RESEARCH

Completed Schemes

Studies on Products of Protein and Ribonucleic Acid Synthesis *in vivo* and *in vitro* by Mitochondria of *Vigna sinensis*

When seeds are germinated in the dark, the young plants do not synthesize any chlorophyll. They have immature chloroplasts having poorly differentiated internal structures, and the growth of such plants depends on the reserve food material in the cotyledons. Upon illumination, rapid synthesis of lipids, proteins and chlorophyll takes place, resulting in mature chloroplasts. An attempt to characterize the protein products synthesized during illumination of dark-grown leaves was made by Dr B. B. Goswami under the guidance of Prof. S. C. Roy. The studies were carried out under a CSIR research scheme at the Department of Biochemistry, University College of Science, Calcutta.

Seeds of *Vigna sinensis* were germinated in the dark for five days and 12 primary leaves of equal size were selected and divided into three groups. One group was pre-incubated in day-

light for 2 hr in 1 ml of distilled water, another group in dark in 1 ml of $10^{-5} M$ cAMP and the third group in the dark in 1 ml of water. Later each group received 30 μCi of L-[U- ^{14}C] lysine (specific activity, 120 mCi/mmmole) and incubation continued for another 6 hr. At the end of the labelling period leaves were homogenized in 10% TCA and the TCA insoluble precipitate washed successively with 10% TCA (twice), alcohol: ether (3:1, twice) and ether (once), and dissolved in electrophoresis buffer (0.01 M sodium phosphate buffer, pH 7.2, 1% SDS and 1% 2-mercaptoethanol) and aliquots representing 300 μg of protein separated by electrophoresis in 10% polyacrylamide gels containing 0.1 % SDS. After staining to visualize the protein bands the gels were cut into 2 mm sections, dissolved in 30% H_2O_2 : liquor ammonia (2 : 1) and counted in a liquid scintillation spectrometer. The results showed that major proteins synthesized by leaf tissue in the absence of light were of low molecular weight. Upon illumination several peaks appeared in the high molecular weight region. cAMP, a transcription regulator, also stimulated synthesis of some of the components

New Schemes

Following is the list, research committee-wise, of new research schemes sanctioned by the Council of Scientific & Industrial Research.

Biochemical, Biophysical & Microbiology Research Committee

Absorptive functions of small intestine in protein-calorie malnutrition in albino rats—Prof. J. Nagchaudhuri, Head of the Department of Physiology, Banaras Hindu University, Varanasi.

Studies on the microbial decomposition of organic wastes by thermophilic fungi and actinomycetes—Dr Shankar Lal Chakrabarty, Reader, Department of Microbiology, Bose Institute, Calcutta.

Studies on the enzyme hydroxymethyloxindole dehydrase and other enzymes of the metabolic pathway of

indoleacetic acid (a plant hormone) in higher plants—Dr P. S. Basu, Department of Botany, Burdwan University, Burdwan.

Immunodiagnostic test for the detection of asymptomatic malignant lymphomas—Dr M. Udayachander, Head of the Biochemistry Department, Cancer Institute, Madras.

Behavioural characteristic of biological molecules absorbed on non-biological surfaces—Dr V. K. Srivastava, Lecturer in Chemistry, Gorakhpur University, Gorakhpur.

Metabolism of fenitrothion, methyl parathion and parathion—Dr B. V. Ramachandran, Emeritus Scientist, Indian Drugs Research Laboratory, Shivajinagar, Poona.

Studies on the lipids of *Streptomyces griseus*—Dr G. K. Khuller and Prof. D. Subrahmanyam, Department of Biochemistry, Postgraduate Institute of Medical Education and Research, Chandigarh.

Cellulases and single cell protein from thermophilic actinomycetes—Dr S. A. Dhala, Head of the Department of Microbiology, Bhavan's College, Andheri, Bombay.

Biological Research Committee

Study of mutagenicity of some widely used pesticides—Dr S. P. Sinha, Bhagalpur University, Bhagalpur.

Aspects of reproduction in some Indian mammals—Prof. C. J. Dominic, Banaras Hindu University, Varanasi.

Demogenetical studies in search of microevolution of two racially different inbreeding tribes—Dr (Mrs) Tulika Sen, College of Science & Technology, Calcutta University, Calcutta.

Improvement studies on *Dioscoreas*, *Solanums* and *Costus* in Darjeeling Hills—Dr S. K. Chatterjee, Director of Cinchona & Other Medicinal Plants, West Bengal.

Germination and growth inhibitors in common weed species—Dr S. C. Datta, Reader, Calcutta University, Calcutta.

Post-harvest physiology of some ornamental flowers—Prof. H. Y.

Mohan Ram, Department of Botany, Delhi University, Delhi.

Studies on the toxicity and pollution effects of industrial wastes on biolife with special reference to fishes in the rivers of western UP—Dr R.C. Dalela, D.A.V. College, Muzaffarnagar.

Tumour formation in mice due to pre-natal irradiation—Dr Y. C. Agarwal, G. S. V. M. Medical College, Kanpur.

Evaluation of helminthological sanitation of water reservoirs of western Rajasthan—Dr Hari Singh Nama, University of Jodhpur, Jodhpur.

Cytogenetic and biochemical investigations in some dioecious Cucurbits—Dr K. B. Datta, Kalyani University, Kalyani.

Studies on some aspects of biochemistry, immunology and chemotherapy of *Leishmania donovani* infected experimental hosts — Dr (Mrs) Premvati, Lucknow University, Lucknow.

Survey of agaric flora of South India—Dr K. Natarajan, Madras University, Madras.

Modification through chemicals of the radiation-induced changes in the structure and function of the thyroid of mammals—Dr (Miss) P. Uma Devi, Lecturer, Rajasthan University, Jaipur.

Investigations on the role of certain hormones and vitamins in the sequential processes during limb regeneration in frog and toad tadpoles and on possible means to restore this ability in the advanced tadpoles and adult frogs—Dr I. A. Niazi, Rajasthan University, Jaipur.

Effects of scorpion venom on physiological changes occurring in animal tissues with special reference to nervous and muscular systems—Dr K. Sasira Babu, S.V. University, Tirupati.

Investigations on the control of insect pests by using naturally occurring nuclear polyhedrosis viruses—Dr S. Jayaraj, Tamil Nadu Agricultural University, Coimbatore.

Studies on experimental ancylostomiasis : cell transfer studies in relation to immunity during hookworm infection—Dr G.N. Jorhi, Lecturer, Vikram University, Ujjain.

Catalyst Research Committee

Studies on molecular sieves as polymerization catalysts—Dr Mukul Biswas, Assistant Professor, Department of Chemistry, IIT, Kharagpur.

Effect of nuclear radiation of solids and their catalytic activity—Dr D. K. Chakrabarty, IIT, Bombay.

Chemical Research Committee

High-temperature solubilities of transitional metal oxides in alkali and alkaline earth metal carbonates and sulphates—Dr A. U. Malik, Aligarh Muslim University, Aligarh.

Bonding and geometry of transition metal ions ($3d^n$, $4d^n$, $4f^n$) in glass: their forming melts and the mechanism of transport behaviour—Dr Nurul Islam, Aligarh Muslim University, Aligarh.

Role of some biological materials and their adsorption characteristics at liquid-liquid and air-liquid interfaces—Dr S. P. Jain, Agra College, Agra.

Studies in the synthesis, reactions and synthetic uses of N-quaternary heterocyclics—Dr Harjit Singh, Guru Nanak Dev University, Amritsar.

Physico-chemical investigations on metal ion interaction with polypeptide systems—Dr Ranjit Singh, Guru Nanak Dev University, Amritsar.

Studies on the precipitation and dissolution potential of electrolytes—Prof. R. P. Rastogi, Gorakhpur University, Gorakhpur.

Solvent extraction of metals with high molecular weight amines—Prof. S.M. Khopkar, IIT, Bombay.

Kinetics of oxidation of organic substrates by metal ions—Dr R. N. Mehrotra, University of Jodhpur, Jodhpur.

Evaluation of some standard reference data for the search of high-energy non-aqueous batteries—Dr K. K. Kundu, Jadavpur University, Calcutta.

Fluoro compounds of vanadium(IV) and tantalum—Dr Apurba Kumar Sengupta, Kalyani University, Kalyani.

Ion-solvent in non-aqueous solvents and melts, molecular interaction in binary liquid systems containing polar

species, mode of migration of ions under potential gradients when solution freezes and the solvation of ions in solution, and diffusion of salts containing a large ion through membranes in different solvents—Prof. Ram Gopal, Lucknow University, Lucknow.

Fabrication of semi-micro kitchen kit to detect food adulteration—Dr (Miss) Agnes Paul, Madras University, Madras.

The kinetics of anodic oxidation of zirconium in some suitable electrolytes—Dr K. S. Sastry, Osmania University, Hyderabad.

Electrical conduction and diffusion studies in crystals containing hydrogen bond—Dr Maheshwar Sharon, University of Poona, Poona.

Study of surface complexes on carbon fibres with a view to understanding and improving the wettability of carbon fibres with resins for composites—Prof. B. R. Puri, Panjab University, Chandigarh.

Electrochemical behaviour of some biologically important compounds such as amino acids, proteins, nucleic acids, and thiols, and their metal complexes, and their applications in human physiology—Dr R. S. Saxena, Malaviya Regional College, Jaipur.

Synthesis and studies of physico-chemical and biochemical properties of polyphosphate complexes of nitrogen-containing bases—Dr P. C. Vyas, University of Rajasthan, Jaipur.

Chemical Engineering Research Committee

Studies on slurry reactors—Dr V.M.H. Govindarao, Assistant Professor, IIT, Bangalore.

Fluid energy milling—Dr M. Ramanujam, Assistant Professor, IIT, Madras.

Civil Engineering & Public Health Research Committee

Studies on basin representativeness and extrapolation of results—Dr H.B.S. Seth, Professor of Civil Engineering, G.B. Pant University of Agriculture and Technology, Pantnagar.

Flow characteristics on non-uniform randomly distributed sand grain beds—Dr T. Gangadharaiah, Assistant Professor, IIT, Kanpur.

Turbulent flow in adverse pressure gradients—Dr P. K. Pande, Department of Civil Engineering, Roorkee University, Roorkee.

Effect of pollution of surface and groundwaters in respect of industries in north-western region—Prof. Satish Chandra, Roorkee University, Roorkee.

Disturbed turbulent boundary layers—Dr K.G. Ranga Raju, Professor of Civil Engineering, Roorkee University, Roorkee.

Prefabricated shear walls—Dr A.R. Santhakumar, Lecturer in Civil Engineering, College of Engineering, Guindy, Madras.

Experimental investigations on the design, properties and uses of steel fibre reinforced concrete—Dr B. S. Basavarajaiah, Professor and Head, Civil Engineering, Karnataka Regional Engineering College, Surathkal, Srinivasnagar.

Development of friction cells and pressure cells for soil-structure interaction—Shri S.C. Sharda, Reader in Structural Engineering, M.B. Engineering College, Jaipur.

Non-linear analysis of plates and shells by numerical method—Dr S.V. Narasimham, Reader, M.N.R. Engineering College, Allahabad.

Design, construction and performance study of reinforced earth embankment—Prof. M. Venkata Ratnam, Head of Civil Engineering, Regional Engineering College, Warangal.

Bullock-cart rational design on systems approach—Dr K. Nagi Reddy, Professor of Structural Engineering, Regional Engineering College, Warangal.

Earth Sciences Research Committee

A mineralogical approach to the problems of beneficiation of complex Indian sulphide ores—Dr A. D. Mukherjee, Department of Geological Sciences and Dr P. K. Sen, Depart-

ment of Metallurgy, Jadavpur University, Calcutta.

Geochemistry of the mafic and ultramafic rocks south of Daltonganj, Palamau, Bihar, with special reference to the magnetite deposits of Sua, Biwabathan, Gore and Semra—Dr N. C. Ghose, Department of Geology, Patna University, Patna.

Temporal variation in mineralogy and diagenesis of clay minerals from the Indian Ocean, and temporal variation in mineralogy, diagenesis and thermoluminescence characteristics of deep sea carbonate oozes from the Indian Ocean—Dr C. N. Rao, IIT, Kharagpur.

Electronics & Instrument Research Committee

Design and fabrication of de-Jong and Bouman X-ray camera (X-ray retigraph)—Dr U. C. Sinha, Department of Physics, IIT, Bombay.

Development of silicon hyperabrupt p-n junction varactors—Dr M. S. Tyagi, Department of Electrical Engineering, IIT, Kanpur.

Materials & Cryogenics Research Committee

Forsterite ceramics for low-loss applications—Dr A. R. Das, Assistant Professor, IIT, Kanpur.

Electrophoretic deposition of ceramic oxides on metal substrates—Dr H. S. Ray, Department of Metallurgical Engineering, IIT, Kanpur.

Mechanical & Electrical Engineering Research Committee

Design of wide-angle gauge assisted diffusers and testing with non-uniform and distorted inlet flow—Prof. N. L. Kachhare, Head, Mechanical Engineering, H. B. Technological Institute, Kanpur.

Distribution of stresses around cracks in anisotropic medium—Dr H. K. Parhi, Department of Mathematics, Regional Engineering College, Rourkela.

Machine tool structural design automated optimum design of shaper mechanism—Shri P. Kannaiah, Lec-

turer, Regional Engineering College, Warangal.

Identification and optimal control of power systems—Dr P. S. R. Murty, Assistant Professor, Electrical Engineering Department, Regional Engineering College, Warangal.

Metals & Corrosion Research Committee

Stress corrosion cracking of prestressing steel wires—Prof. K. P. Singh, Department of Metallurgical Engineering, IIT, Kanpur.

Techniques required for recycling mill water including separation of ultrafine particles—Dr Ing. P. Sen, Professor in Chemical Engineering, IIT, Kharagpur.

Beneficiation of low-grade graphite ores from Karnataka—Dr U. B. Nayak, Assistant Professor, Indian Institute of Science, Bangalore.

Corrosion prevention of underground mining equipment and accessories—Dr N. S. Rawat, Assistant Professor in Chemistry, Indian School of Mines, Dhanbad.

Electrochemical studies to evolve criteria for anodic protection—Prof. T. P. Sastry, Head, Chemistry Department, S. V. Regional College of Engineering and Technology, Surat.

Pharmaceuticals, Pesticides & Organic Intermediates Research Committee

Total synthesis of therapeutically active sterols—Prof. S. K. Pradhan, Department of Chemical Technology, Bombay University, Bombay.

Biochemical effects of pesticides in germinating seeds—Dr S. K. Banerjee, Lecturer in Biochemistry, Calcutta University, Calcutta.

Synthesis and toxicology of industrial organotin compounds — Prof. T. N. Srivastava, Lucknow University, Lucknow.

Antifertility studies of certain drugs—Dr V. P. Dixit, Lecturer, Rajasthan University, Jaipur.

To evolve a simple, quick method for detection of aflatoxin—Prof. N. K. Bhide, Head, Department of Pharma-

cology, All India Institute of Medical Sciences, New Delhi.

Studies on the potential germicides—Dr S. S. Misra, Lecturer, Feroze Gandhi College, Rae Bareilly.

Investigation on the active principle of indigenous plant extract for development of new pesticides and agrochemicals and studies on their efficacy and effects on crop plants—Prof. (Mrs) Asima Chatterjee, Head of Pure Chemistry, Calcutta University, Calcutta.

Proposal for establishment of a steroid research centre for investigations in the field of steroids—Prof. D. K. Banerjee, Department of Organic Chemistry, Indian Institute of Science, Bangalore.

Physical Research Committee

Development of laser interferometric techniques for the analysis of stresses and deformations in structural elements—Prof. P. R. Rao, Head of Physics Department, Delhi College of Engineering, Delhi.

Transport and magnetic properties of transition and rare-earth metal compounds—Dr Hari Baksh Lal, Lecturer in Physics, Gorakhpur University, Gorakhpur.

Synthesis of two-dimensional magnetic compounds and their use in developing magnetic thin films—Dr Ram Achal Singh, Department of Physics, Gorakhpur University, Gorakhpur.

Resonance fluorescence, resonance Raman scattering and infrared absorption of simple ions and molecules in vapour and condensed systems—Dr H. D. Bist, Department of Physics, IIT, Kanpur.

Study of magnetic and thermal properties of transition metal alloys: Cu and Zn based binary alloys and Te, Sn, and Pt based ternary alloys—Dr D. C. Khan, Department of Physics, IIT, Kanpur.

Fluid dynamic aspect of blood flow and arterial diseases—Prof. S. D. Nigam, Department of Mathematics, IIT, Madras.

Transport phenomena in molecular liquids—Dr R. C. Bhandari, Department of Physics, Rajasthan University, Jaipur.

Growth perfection and analysis of calcite—Prof. G. S. Laddha, Alagappa Chettiar College of Technology, Madras.

Study of adulteration in oils and fats by ultrasonic methods—Dr C. Raghupatai Rao, Physics Department, Nizam College, Osmania University, Hyderabad.

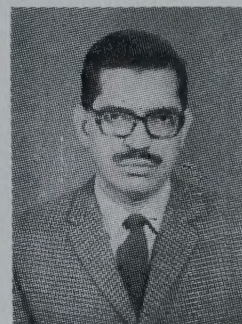
PERSONNEL NEWS

Appointments/Promotions

Shri K. R. Bulusu

Shri K. R. Bulusu has been promoted as Scientist F at the National Environmental Engineering Research Institute

(NEERI), Nagpur, with effect from 28 March 1977. Shri Bulusu (born 23 March 1937) obtained his chemical engineering degree in 1958 from the Jadavpur University. He took up re-



search in biochemical utilization of industrial wastes at the Jadavpur University in 1958 and carried out work on biodegradation of distillery wastes for a short period. He joined Bird & Co. Pvt. Ltd, Calcutta, and worked on problems in water treatment until February 1961. During this period, he designed, erected and commissioned precipitation and ion exchange softening plants, demineralization and desilicization plants, pressure filters and iron removal plants, and chlorination equipment.

Shri Bulusu joined NEERI in March 1961 and has since been working there in various capacities both at its zonal laboratories and headquarters. He has been working for the past 10 years as head, Water Division at Nagpur.

Shri Bulusu obtained his M. Sc. degree in public health engineering from the University of New Castle Upon Tyne, UK, in 1967. While in

UK (1966-67), he worked under Dr J. R. Simpson on the susceptibility of certain organic compounds to biodegradation and helped in the development of the biological disc unit for waste treatments.

Shri Bulusu has carried out research on natural and synthetic coagulant aids to reduce alum consumption, package water treatment plants for small communities, defluoridation of drinking water on domestic and community level, iron and manganese removal units, substitutes for diatomaceous earth filter aids, membrane filters, iodine tablets, disinfection tablets and ampoules, activated silica in water treatment and interference in coagulation of suspended impurities in water by polyphosphates. The work resulted in four patents and several know-how, some of which have been released to entrepreneurs for commercial exploitation.

Shri Bulusu participated in a WHO Travelling Seminar on Purification and Disinfection of Drinking Water in USSR in 1969. In 1970, he was deputed to Tanzania to prepare a report on the defluoridation at Arusha region in Tanzania. He served as a short-term WHO consultant to advise Kenyan and Tanzanian governments on defluoridation problems. He was vice uPVC chairman of an expert panel meeting on Toxicity of uPVC pipes and coagulant aids held in 1973 at The Hague, Netherlands, organized by the WHO International Reference Centre for Community Water Supply. He also participated in the WHO task group meeting on environmental health criteria for nitrates, nitrites and nitrosamines at Lyon, France.

Shri Bulusu has carried out research in water and waste water treatment problems and has published more than 35 scientific papers. He has also several technical reports to his credit on various environmental engineering problems. He is a member of

many professional bodies in India and abroad.

The following have been appointed Scientist B at NEERI: Dr V. I. Pandit (on promotion, 1 March 1977); Dr A. V. Pendharkar (15 March 1977) and Shri Mohamad Zubair Hasan (28 March 1977).

Dr A. Goswami, Dr M. Goswami and Shri R. V. Kulkarni have been promoted from Scientist E I to Scientist E II at the National Chemical Laboratory (NCL), Poona (17 Dec. 1975).

Appointments at NCL include: Dr P. K. Ranjekar (Scientist C, 17 March 1977); Dr V. H. Deshpande (Scientist B, 24 Feb. 1977); and Dr B. G. Hazra (promoted from SSA to Scientist B, 2 March 1977).

The following personnel have been appointed at the Indian Institute of Petroleum (IIP), Dehra Dun: Shri Bodh Raj (Scientist B, 6 Jan. 1977), Shri S. K. Kapoor (Scientist B1, 9 March 1977), Shri Kisalaya Nandi (Scientist B, 18 April 1977) and Shri Ishwar Chandra (Scientist B, 26 Nov. 1976).

Promotions at IIP include: Shri S. K. Jain (Scientist C1, 17 Feb. 1976), Shri R. C. Joshi (Scientist B1, 11 Aug. 1976), Shri P. V. Dogra (Scientist A; 1 Sep. 1976), Miss S. K. Chopra (Scientist A1; 27 Dec. 1976), Shri R. L. Sharma (Scientist A; 27 Dec. 1976), Shri J. M. Nagpal (Scientist A; 25 Aug. 1975), Shri Krishan Kumar (Scientist A; 3 Oct. 1975), Shri Jai Ram Rai (Scientist A; 25 Aug. 1975), Shri S. K. Chibber (Scientist A1, 5 Oct. 1975) and Shri N. R. Gupta (Scientist A1, 23 July 1976).

Transfers

Shri O. M. Parthasarathy, Accounts Officer, NCL, has been transferred to Regional Research Laboratory, Bhubaneswar (25 March 1977).

Shri T. S. Visweswariah, Accounts Officer, Visvesvaraya Industrial and Technological Museum, Bangalore, has been transferred to NCL as Senior Accounts Officer (25 March 1977).

Shri Rajendra Narain took charge (4 April 1977) as Administrative Officer I, Publications and Information Directorate (PID) and the Indian National Scientific Documentation Centre (INSDOC), New Delhi, on transfer from the Central Electronics Engineering Research Institute, Pilani.

Shri H. L. Khurana took charge (19 Jan. 1977) as Accounts Officer, PID, on transfer from the National Physical Laboratory, New Delhi.

Retirements

Shri M. V. Kunte, Scientist E, NCL, retired (31 March 1977).

Shri R. C. Shastri, Section Officer, NCL, retired (31 March 1977.)

Honours

Dr S. U. Deshpande, Pool Officer, NEERI, has been elected a Fellow of the Indian College of Allergy and Applied Immunology in recognition of his original contribution to the field of allergy, applied immunology and allied aspects. Dr Deshpande has also been elected a council member to represent central India in the International Aerobiology Association, India Unit.

Shri V. Raman, Scientist, NEERI, has been appointed a member of the editorial board of *Scavenger*, Journal of the Society for Clean Environment (SOCLEEN), Bombay.

PATENTS FILED

32/Del/77: A process for grouting steel bolts, cables and cellular bolts in a drill hole for support of ground in mines and civil engineering works, B. P. Verma, B. Singh, N. P. Murty Raju & S. Bagchi—CMRS, Dhanbad.

35/Del/77: Five-speed hub for vehicles such as bicycles, S. K. Rao & U. P. Chowdhury—CMERI, Durgapur.